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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/710,505	07/16/2004	Yi-Tyng Wu	NAUP0555USA	4504

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NORTH AMERICA INTERNATIONAL PATENT OFFICE (NAIPC)  
P.O. BOX 506  
MERRIFIELD, VA 22116

EXAMINER

HARRISON, MONICA D

ART UNIT PAPER NUMBER

2813

DATE MAILED: 08/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/710,505	<b>Applicant(s)</b> WU, YI-TYNG	
	<b>Examiner</b> Monica D. Harrison	<b>Art Unit</b> 2813	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 July 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5, 7-11 and 13 rejected under 35 U.S.C. 102(b) as being anticipated by Wu (6,586,303 B2).

1. Regarding claim 1, Wu discloses a method for fabricating a buried bit line of a mask ROM, the method comprising: providing a semiconductor substrate (Figure 5, reference 50) with a photoresist layer coated on the semiconductor substrate (not shown, above pad oxide (Figure 5, reference 54; column 1, lines 38-42); patterning the photoresist layer to form a photoresist pattern (Figure 5, reference 56); performing a first ion implantation process to form a first doped region in the semiconductor substrate not covered by the photoresist pattern (Figure 5, reference 60); forming an organic spacer on sidewall of the photoresist pattern (column 2, lines 1-3); performing a second ion implantation process to form a second doped region in the semiconductor substrate not covered by the photoresist pattern and the organic spacer (Figure 5, reference 60) and stripping the photoresist pattern and the organic spacer (column 4, lines 10-11).

2. Regarding claim 2, Wu discloses performing a hot treatment process to harden the photoresist pattern after performing the first ion implantation process (column 4, lines 2-3).

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3. Regarding claim 3, Wu discloses wherein the hot treatment process is an UV curing process or a hot plate process (column 3, lines 62-63).

4. Regarding claim 4, Wu discloses wherein the first doped region is a lightly doped drain (LDD) (Figure 6, reference 66).

5. Regarding claim 5, Wu discloses wherein the second doped region is an N<sup>+</sup> doped region (Figure 4, reference 44).

6. Regarding claim 7, Wu discloses wherein the step of forming the organic spacer includes a step of performing a dry etching process (column 3, lines 48-51).

7. Regarding claim 8, Wu discloses a method for fabricating a mask ROM, the method comprising: providing a semiconductor substrate (Figure 5, reference 50) with a photoresist layer coated on the semiconductor substrate (not shown, above pad oxide (Figure 5, reference 54; column 1, lines 38-42); patterning the photoresist layer to form a photoresist pattern (Figure 5, reference 56); performing a first ion implantation process to form a first doped region in the semiconductor substrate not covered by the photoresist pattern (Figure 5, reference 60); performing a hot treatment process to harden the photoresist pattern (column 4, lines 2-3); forming an organic spacer on sidewall of the photoresist pattern (Figure 4, reference 40); performing a second ion implantation process to form a second doped region in the semiconductor substrate not covered by the photoresist pattern and the organic spacer (Figure 5, reference 60); stripping the photoresist pattern and the organic spacer (column 4, lines 10-11); forming an insulating layer on the semiconductor substrate and a word line on the insulating layer (Figure 7, reference 70; column 4, lines 10-18).

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8. Regarding claim 9, Wu discloses wherein the hot treatment process is an UV curing process or a hot plate process (column 3, lines 62-63).

9. Regarding claim 10, Wu discloses wherein the first doped region is a lightly doped drain (LDD) (Figure 6, reference 66).

10. Regarding claim 11, Wu discloses wherein the second doped region is an N<sup>+</sup> doped region (Figure 4, reference 44).

11. Regarding claim 13, Wu discloses wherein the step of forming the organic spacer includes a step of performing a dry etching process (column 3, lines 48-51).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu 6,586,303 B2) in view of Chang et al (US 2004/0029347 A1).

Wu discloses all above claimed subject matter except the bottom anti-reflective coating (BARC) (claims 6 and 12).

Chang et al discloses bottom anti-reflective coating (BARC) (pg.6, paragraph 0053).

Since Wu and Chang et al are both from the same field of endeavor, the purpose disclosed by Chang et al would have been recognized in the pertinent art of Wu.

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It is obvious, at the time the invention was made, for one having ordinary skill in the art, to modify Wu with the teachings of Chang et al for the purpose of code programming a mask read only memory (ROM).

*Conclusion*

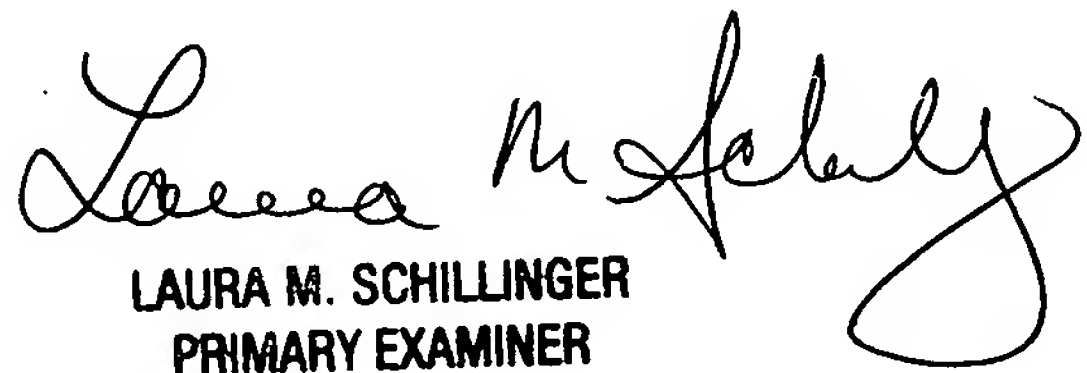
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica D. Harrison whose telephone number is 571-272-1959. The examiner can normally be reached on M-F 7:00am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on 571-272-1702. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Monica D. Harrison  
AU 2813

mdh  
August 5, 2005

  
LAURA M. SCHILLINGER  
PRIMARY EXAMINER